KOLOBKOV, N.V.

6.10-6 551.5(02)

Kobiikov, N. V. Vozdushnyi okean i ego zhizn'. [The atmospheric ocean and its life.] Moscow, 1956, 587 p. 56 figs., photos, foot-refs. DLC—A popular (40,000 copies issued) text by the author of Grozy i Shkvaly (Thunderstorms and squalls. See item 5.8-4, Aug. 1953, MAB), covering many unusual phenomena in the atmosphere, as well as: 1) chapter giving the usual description of atmospheric structure (3-color model to 300 km included), composition, methods of upper air observation, etc. The successive chapters cover: 2) atmospheric electricity, 3) lightning and thunder and laboratory experiments on lightning, 4) thunderstorms, 5) thundershowers and heat, 6) storms and hurricanes, tornadoes, dust storms, 7) combatting the fearful forces of nature, 8) high atmospheric phenomena (noctilucent clouds and auroras) and 9) optical phenomena (green flash, mirage, rainbows, halos, coronas and dust). *Subject Headings:* 1. Severe storms 2. Optical phenomena 3. Popular textbooks. —*M.R.*

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910007-1"

KOLOBKOV, N.V.; MEZENTSEV, V.A.; KASHIN, K.I., doktor geograf.nauk, otv.red.; YEZERSKIY, Ye.M., red.; KUZNETSOV, N.S., red.kart; GLEYKH, D.A., tekhn.red.

[Storm phenomena in the atmosphere] Grozovye iavleniia atmosfery. Moskva, Ges.izd-vo geogr.lit-ry, 1951. 149 p. (MIRA 13:6)

(Storms)

KOLOBKOV, NIKOLAY VASIL'YEVICH

PHASE I BOOK EXPLOITATION 599

Kolobkov, Nikolay Vasil'yevich

Vozdushnyy okean i yego zhizn' (The Ocean of Air and its Life) 2d ed., rev. and enl. Moscow, Geografgiz, 1957. 30,000 copies printed.

Ed.: Vyazov, Ye. I.; Tech. Ed.: Nogina, N.I.; Map Ed.: Mal'chevskiy, G.N.

PURPOSE: The book is designed to provide the general reader interested in geophysics with a description of the structure of the atmosphere and an analysis of the various phenomena occurring in it.

COVERAGE: This book, written in a popular style, acquaints the reader with the structure of the atmosphere and the optical, electrical and other phenomena occurring in it. The second edition differs from the first, published in 1954, in that it describes the latest methods of investigating the upper layers of the atmosphere using rockets, radio waves and acoustics, and discusses the relationship between solar activity and

Card 1/4

The Ocean of Air and its Life 599

weather, the water cycle in the atmosphere and its application to agriculture, the effect of large cities on the microclimate, and the latest methods of weather control. It presents the results of studies conducted in the Arctic and the Antarctic, discusses the aurora, and analyses the violent meteorological phenomena which had occurred during the winter of 1955 and spring of 1956. The introduction contains an historical account of the development of meteorology through the ages, with an almost exclusive emphasis on Russian contributions. The author acknowledges his indebtedness to K.V. Kuvshinova, a candidate of physical and mathematical sciences, for her review of the book and suggestions. The book is profusely illustrated with diagrams, drawings, and photographs. There are no references.

Card 2/4

KOLOBKOV, N.V.

Tornado over Moscow. Meteor.i gidrol. no.6:32-33 Je '57.
(MLRA 10:8)

(Moscow--Tornadoes)

KOLOBKOV, N.V., kandidat tekhnicheskikh nauk (Moskva)

Weather contrasts in February. Priroda 46 no.2:124-125 F '57.
(MLRA 10:3)

(Winter)

KOLOBKOV, Nikolay Vasil'yevich [Kolobkov, M.V.]; KUVSHINOVA, K.V., kand. fiz.-matem.nauk, retsenzent; SHPORT'YUK, V.I., red.; VOLKOVA, N.K., tekhn.red.

[The atmosphere and life in it] Povitrianyi okean i ioho zhyttia. Perekl. z dr.perer. i dop. vyd. geogr. Kyiv, Derzh.uchbovo-pedagog.vyd-vo "Radians'ka shkola," 1958. 232 p. (MIRA 14:4)

(Meteorology)

KOLOBKOV, N.V.

AUTHOR: Kolobkov, N. V. 50-1-19/26

TITLE: Weather Contrasts (Kontrasty pogody)

PERIODICAL: Meteorologiya i Gidrologiya, 1958, Nr 1, pp. 56-59 (USSR)

ABSTRACT: In recent years the stormy and extraordinary weather of contrasts which comprised the northern and southern hemisphere caused numerous catastrophes and took toll of human lives. According to the still very incomplete data 100 meteorological catastrophes were in 1956 recorded on the globe. These figures alone do not say much, as no count of the annual average number of the terrible natural phenomena is hitherto known. The surface of our planet is large and every year meteorological catastrophes somewhere take place, but what is surprising in recent times is the intensity of these spontaneous phenomena. Quite a number of these phenomena attained an extraordinary power which fairly seldom occurs (once every 40-50 years). All this indicates the extraordinary unusual intensity of the atmospheric processes. Without exaggeration the year 1956 may be called the year of meteorological catastrophes. (A detailed enumeration of these catastrophes is given).

Card 1/2

Weather Contrasts

50-1-19/26

The year 1957 apparently is the culmination of the 11-years cycle of solar activity. It may therefore be assumed that in connection with the stormy development of the processes on the sun (and consequently of the intensification of the geoactive radiation - ultraviolet and corpuscles) the processes in the terrestrial atmosphere develop just as stormy and rich in contrasts. But the rules governing the problem "sun - earth" and the circumstances of such effects are still unknown. The theoretical investigations of soviet and foreign meteorologists as well as the not numerous, direct measurements permit to assume a close interaction of the atmospheric circulation in the troposphere and ionosphere. All these hitherto still little investigated phenomena important for the weather forecast require for their solution the efforts of a larger number of scientists. The author expresses the hope that the observation complex of the International Geophysical Year which comprises the entire globe and especially the launching of the artificial earth satellite will cast light upon all questions of the problem "sun - earth". There are 10 references, 10 of which are Slavic.

Card 2/2

AVAILABLE: Library of Congress

1. Storms-1956 2. Meteorology-Storms-1956

50-58-3-16/22

AUTHOR: Kolobkov, N. V.

TITLE: Unusual Phenomena of Aurora Borealis (Neobychnyye polyarnyye siyaniya)

PERIODICAL: Meteorologiya i Gidrologiya, 1958, Nr 3, pp. 56 - 58 (USSR)

ABSTRACT: Polar aurora belongs to the most wonderful and astonishing natural phenomena. In the Arctic and Antarctic it is very often observed in the course of the polar night. But from time to time it also flames up in the temperate and southern latitudes of our hemisphere. According to data in publications it can only very seldom occur in the equatorial zone. When connecting the points with an equal annual number of polar aurora by lines they approximately form concentric circles the center of which does not agree with the geographical pole. The circle with a number of more than 100 phenomena of aurora borealis in the year's average encircles about the entire region of the Arctic. The auroral phenomena occur most frequently in a strip of land lying at a distance of 2200 to 2800 km from the magnetic pole. In the south and

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north of this zone their frequency decreases. At the latitude of Moscow the auroral phenomena are observed once every 9 - 15 years. But in September 1957 they were four times recorded in temperate latitudes, in the nights of September 5, 22, 23 and 30. In the nights between September 4 - 5 and 29 - 30 the rays were of special brightness and duration as well as penetrating unusually deep into the southern latitudes. They attracted the attention of many thousands of people. This really was an extraordinary phenomenon. How can such a deep penetration of these unusual auroral phenomena into the southern latitudes be explained? In order to be able to understand the nature of auroral phenomena it is of special importance to determine the exact connection existing between the auroral phenomenon and terrestrial magnetism. This connection is manifold. It was already pointed out that the zones of the frequency of auroral phenomena are distributed circularly around centers near the northern (and southern) magnetic pole. Further the connection with magnetic storms has to be pointed out which cause unusual vibrations of the magnetic needle and disturbances in the radio. With the formation of a magnetic storm auroral lights at once flame up in the polar regions. It is noteworthy that

in very strong magnetic storms auroral phenomena are observed in temperate and even in southern latitudes. The agreement with respect to time of magnetic storms and auroral phenomena usually is complete. This connection indicates a common cause of the magnetic storms of the earth's magnetic field and the auroral phenomena. This cause are the electric currents in the upper atmospheric layers (motion of ions and electrons). At present we probably witness the maximum of solar activity. The processes on the sun are very violent and the currents of corpuscles very intensive. In the light of these statements the general picture of the auroral phenomena on September 4 - 5 and 29 30 becomes somewhat clearer. The globe was with regard to the sun (corpuscle currents) in favorable conditions. On September 2, 3 and 4, as well as 26, 27 and 29 a bright chromospherical flaming-up was recorded. The magnetic rigidity of the corpuscles increased and they could break through into the ionosphere of the temperate and southern latitudes. The intensity of the corpuscle currents led to auroral phenomena of gigantic dimensions. There are 2 figures, and 3 Soviet references.

AUTHOR: Kolobkov, N. V. 50-58-3-20/22

TITLE: The Meteorological Commission of the Moscow Branch of the Geographical Society of the USSR (Meteorologicheskaya komissiya Moskovskogo filiala Geograficheskogo Obshchestva SSSR)

PERIODICLA: Meteorologiya i Gidrologiya, 1958, Nr 3, p. 69 (USSR)

ABSTRACT: On November 16, 1957 a meeting of the Meteorological Commission of the Moscow Branch of the Geographical Society of the USSR was held at the Moscow Lomonosov State University. The meeting began with a lecture by G. M. Tauber on the subject "Peculiarities of the Meteorological Conditions of the Antarctic.". The main work of this commission is divided into the following sections: lectures and their discussion on the last scientific achievements of meteorology, informations on meteorological science in the USSR and abroad, examination of notes and papers on meteorological subjects of special interest, arrangement of guided excursions, participation in public measures, explanatory work in problems of meteorology, contributions to scientific research subjects, scientific contact with meteorological societies abroad etc.

Card 1/1

KOLOBKOV, Nikolay Vladimirovich; YANCHUK, A., red.; YEGOROVA, I., tekhn.red.

[Climate of Moscow and its environs] Klimat Moskvy i Podmoskov'ia. Moskva, Mosk.rabochii, 1960. 104 p. (MIRA 13:5)

(Moscow Province--Climate)

S/050/60/000/06/19/021
B007/B007

AUTHOR: Kolobkov, N. V.

TITLE: Conference on the Problem "Sun - Troposphere"

PERIODICAL: Meteorologiya i gidrologiya, 1960, No. 6, pp. 51-52

TEXT: This is a report on the Interdepartmental Conference on the problem "Sun - Troposphere", which took place in Leningrad and at the Pulkovskaya observatoriya (Pulkovo Observatory) in February 1960. The Conference was organized by the Solnechnaya komissiya AN SSSR (Solar Commission of the AS USSR) with the aid of the Glavnoye upravleniye gidrometeosluzhby SSSR (Main Administration of the Hydrometeorological Service of the USSR) and the Glavnaya geofizicheskaya observatoriya im. A. I. Voyeykova (Main Geophysical Observatory imeni A. I. Voyeykov). It was attended by 127 experts of 25 scientific institutes. 16 participants delivered 23 lectures on the following subjects: Atmospheric circulation: L. A. Vitel's, T. V. Pokrovskaya, N. L. Spitsyna, A. L. Kats, A. A. Girs, B. M. Rubashev, L. R. Rakipova, and Zh. N. Kamenskaya. Fluctuations of

Card 1/2

Conference on the Problem "Sun - Troposphere" S/050/60/000/06/19/021
B007/B007

hydrometeorological main characteristics: B. A. Apollov, A. V. Shnitnikov, I. M. Soskin, N. V. Somov, and A. M. Reznikovskiy. The physics of the sun: V. A. Krat and M. S. Eygenson. Biology and medicine: N. S. Shcherbinovskiy, N. A. Shul'ts, and P. V. Desyatov. Climatic fluctuations: I. Ye. Buchinskiy and A. S. Govorov. Forestry: V. I. Duginov and S. I. Kostin. A lecture was further held by N. V. Kolobkov on the most important weather-phenomena on the Earth. It was stated at the Conference that it would be desirable to organize a center for the problem "Sun - Troposphere" at the AS USSR.

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S/026/60/000/008/003/006
A166/A029

AUTHOR: Kolobkov, N.V.

TITLE: Solar Activity - Weather - Climate

PERIODICAL: Priroda, 1960, No. 8, pp. 25 - 34

TEXT: The author analyses the connection between weather and solar activity on the basis of recent Soviet research. The periodic increases in solar activity (solar cycles), expressed in the form of sun spots, solar protuberances and chromospheric flares, lead to an increase in geoactive radiation which affects the general circulation of the earth's atmosphere and, in turn, the weather and climate. Research at the Institut geografii AN SSSR (Institute of Geography of the AN, USSR) under the direction of Professor P.L. Dzerdzeyevskiy indicates that solar activity maxima are accompanied by intensified circulation of air masses and frequent collisions between warm and cold air streams. The connection between atmospheric circulation and solar activity has also been established by the Glavnaya astronomicheskaya observatoriya Akademii nauk SSSR (Main Astronomical Observatory of the Academy of Sciences of the USSR) at Pulkovo. Led by Professor G.Ya. Vangeneym and A.A. Girs, scientists at the Arkticheskiy i antarkticheskiy

Card 1/4

Solar Activity - Weather - Climate

institut (Arctic and Antarctic Institute) have determined the three basic forms of atmospheric circulation and have related them to the types of weather which predominate in a given season. A minimum of solar activity is accompanied by a predominating movement of air masses from west to east giving a relatively calm weather in the northern hemisphere. A solar activity maximum gives a meridional air shift or else a zonal shift from east to west. This brings a lively interchange of air masses between the polar regions and the tropics; temperature contrasts increase and weather becomes stormy. Solar activity, and consequently weather, passes through various cycles, chief of which are the 11-year and the 100-year cycles. The absolute maximum of the present 11-year cycle in 1958 was a record high and obviously coincided with the maximum of the 100-year cycle. The present cycle's minimum is expected in 1965. The relationship between sun and troposphere formed the main topic of discussion at the conference held from February 8 - 11, 1960, in Leningrad and at the Pulkovo Astronomical Observatory. The following data are mainly based on the proceedings of the conference. Professor V.A. Krat discussed the latest views on solar activity. With the help of a solar magnetograph it was found that flares originate from sudden concentration and collapse of magnetic fields, which leads to rapid heating of a small area of the solar gas to temperatures in the region of several million degrees. Coronary

Card 2/4

Solar Activity - Weather - Climate

particles are accelerated to speeds of more than 1,000 km/sec and directed radially to the center of the magnetic disturbance. An internally directed explosion results, producing hot plasma which spreads sideways and rapidly increases the area of the flare. A vast quantity of corpuscular material is also ejected. Contrary to previous opinion, recent meteorological research has shown that the solar activity constant is, in fact, no constant but is subject to considerable shifts into the short-wave and corpuscular spectrum. L.A. Vitel's has also studied the large-scale effect of solar activity on the atmospheric processes and has deduced that the 11-year cycle generally has two waves, i.e., is subdivided into 5 - 6 year cycles. In their study of the variations in the hydrological characteristics of the Baltic, Barents and Caspian seas, Professors B.A. Apollov and I. M. Soskin have found that epochs of reduced solar activity correspond to a high level of the Caspian, high ice state of the Barents Sea and reduced salinity of the Baltic. This is due to the lower air temperature and reduced evaporation rate. Figure 4 presents a graph comparing the number of meteorological catastrophies in 1945 - 1960 with the solar activity indices (total area of sun spots and the Wolf number). The sum area of sun spots is based on A.Ya. Bezrukova's observations. An account of the major meteorological catastrophies from 1955 - 1959 is also given. The evidence indicates that the number of catastrophies increases

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83298
S/026/60/000/008/003/006
A166/A029

Solar Activity - Weather - Climate

with a rise in solar activity, reaches its maximum a year ahead of the Wolf number and then rapidly declines. Taking into consideration the total area of the sun spots, the coincidence is complete. As L.R. Rakipova has shown, solar activity affects the upper layers of the atmosphere and the effect then spreads downwards to the troposphere. Unfortunately, there are still no exact data on the interaction between the latter and the upper atmospheric layers. The author assumes that the thawing of the Arctic, which began in the 1920's in connection with the present 100-year cycle, will probably cease and give way to a gradual freeze-up extending over several decades, thus completing the 100-year cycle. There are 6 photos and 1 graph.

Card 4/4

KOLOBKOV, N.V.

Outstanding weather phenomena of the world in 1960. Meteor.i gidrol. no.6:53-55 Je '61. (MIRA 14:5)
(Meteorology)

KOLOBKOV, N.V. (Moskva)

Colored rain. Priroda 50 no.7:109-110 Jl '61. (MIRA 14:6)
(Rain)

KOLOBKOV, N.V.

Outstanding phenomena of the world weather in 1961. Meteor. i gidrol. no.5:48-52 My '62. (MIRA 15:6)
(Weather)

KOLOBKOV, N.V.

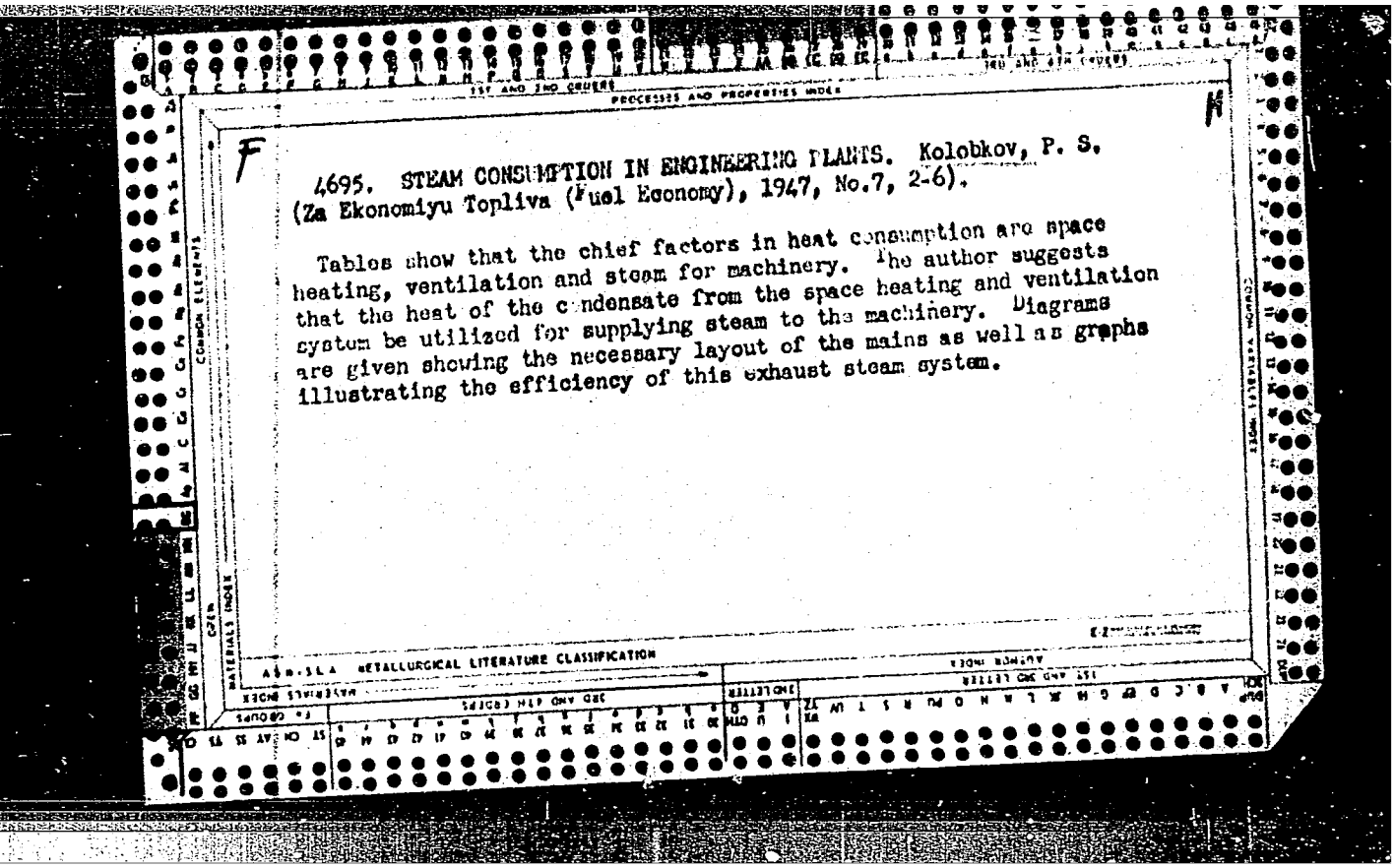
Outstanding phenomena of the world's weather in 1962. Meteor. i gidrol. no.3:52-54 Mr '63. (MIRA 16:3)
(Weather)

KOLOBKOV, N.V. (Moskva)

A hard winter. Priroda 52 no.4:127-128 '63. (MIRA 16:4)
(Winter)

KOLOBKOV, N.V. (Moskva)

Hurricane "Flora." Priroda 53 no.1:91-94 '64. (MIRA 17:2)



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4695. STEAM CONSUMPTION IN ENGINEERING PLANTS. Kolobkov, P. S. (Za Ekonomiyu Topliva (Fuel Economy), 1947, No.7, 2-6).

Tables show that the chief factors in heat consumption are space heating, ventilation and steam for machinery. The author suggests that the heat of the condensate from the space heating and ventilation system be utilized for supplying steam to the machinery. Diagrams are given showing the necessary layout of the mains as well as graphs illustrating the efficiency of this exhaust steam system.

H

KOLOBKOV, P.S.

Sep 1947

USSR/Engineering
Heating, Industrial
Industrial Equipment

"Reconstruction of the Central Heating System at Factories in Kramatorsk," P. S. Kolobkov, 3½ pp

"Za Ekonomiyu Topliva" Vol IV, No 9

The author discusses the system of central heating used in the towns and industries of Kramatorsk. Gives sketches of the pipe layout and also gives some of the operational figures, and very briefly tells of some of the details of the equipment used.

23T43

KOLOBKOV, P.S.

29637

Ispol'eovaniye tyela myatogo Para Kuenyechnopryessovykh tsyekhov v lyetniy pyeriod (Na TETS). Ea Ekonomiyu Topliva, 1949, No.9, S.18-20

SO: Letopis' No.40

MALISHEVSKIY, N.G., redaktor; KOLOBKOV, P.S.; KONDRAT'YEV, N.I.; MALOVA, N.M.

[Design and operation of water supply and sewer pumping stations] Proektirovanie i ekspluatatsiia vodoprovodnykh i kanalizatsionnykh nasosnykh stantsii. Pod red. N.G.Malishevskogo. Moskva, Gos. izd. lit. po stroitel'stvu i arkhitekture, 1953. 411 p. (MLRA 7:11D)

KOLOBKOV, Pavel Sergeyevich

KOLOBKOV, Pavel Sergeyevich (Khar'kov Engineering-Construction Inst). Academic degree of Doctor of Technical Sciences, based on his defense, 25 February 1955, in the Council of the Moscow Order of Lenin Power Inst imeni Molotov, of his dissertation entitled: "Selection of method for operating hammers and presses, the utilization of reheating at machine building plants." For the Academic Degree of Doctor of Sciences.

SO: Byulleten' Ministerstva Vysshego Obrazovaniya SSSR, List No. 6, 17 March 1956, Decision of Higher Certification Commission Concerning Academic Degrees and Titles.

JPRS 512

KOLOBKOV, P.S., prof., doktor tekhn.nauk

Possibilities for increasing the efficiency of systems for combined production of electric power and heat. Izv.vys.ucheb.zav.; energ. no.1:79-82 M '58. (MIRA 12:1)

1. Khar'kovskiy inzhenerno-stroitel'nyy institut. Predstavlena kafedroy teplogazosnabzheniya i ventilyatsii.
(Heat engineering) (Power engineering)

8(6), 14(6)

SOV/143-58-11-11/16

AUTHOR: Kolobkov, P.S., Doctor of Technical Sciences, Professor

TITLE: Means for Increasing the Economy of District Heating Systems

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1958, Nr 11, pp 79-82 (USSR)

ABSTRACT: Problem of the electric power supply, district heating and gas supply are permanently connected to each other. It is not proper to solve one of these problems by separating it from the others, since such a deviation may lead to incorrectable mistakes causing tremendous material losses. Research work concerning the solution of the principal problems of district heating must have an economical and engineering foundation and must take into consideration the numerous and complicated interaction of the electric power and the gas supply. New developments in power engineering make these investigations especially important. In this connection the author mentions the construction

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of large thermal power plants with capacities of 1,000-2,400 megawatts working with pressures of 130-220 atmospheres and eventually in the future with 300 atmospheres. The power distribution systems are being enlarged. Natural gas became an important factor of the USSR fuel supply. Another factor is the development of gas turbines. The planning of district TETs must be made in the direction of enlarging the stations and increasing the power of the individual units in them. The power of heat plant turbines should not be less than 50 megawatts (or principally 100 megawatts) using steam of 130 atmospheres at 565°C. The peak load of TETs should be covered by water heating boilers, which are considerably cheaper than steam boilers. For the heat supply of industrial installations, settlements, separate town districts and other sites having a comparatively low load, small heat plants may be profitable. The author mentions the future possibility of supplying ice water in summer for cooling purposes or a cooling agent in a separate

KOLOBKOV, P.S., doktor tekhn.nauk prof.; ROMASHKO, V.V., prof.

Central heat regulation of steam-heating systems. Izv.vys. ucheb.zav.; energ. 2 no.8:89-97 Ag '59. (MIRA 13:2)

1. Khar'kovskiy inzhenerno-stroitel'nyy institut. Predstavlena kafedroy teplosnabzheniya i ventilyatsii.
(Steam heating--Regulators)

KOLOBKOV, P.S.

Thermotechnical calculations for underground reinforced-concrete water reservoirs. Vod. i san. tekh. no.10:22-26 '59.
(MIRA 13:1)

(Reservoirs) (Water-supply engineering)

KOLOBKOV, P.S., doktor tekhn.nauk prof.

Using steam of evaporative cooling of metallurgical furnaces. Izv.vys.ucheb.zav.; energ. 2 no.11:133-138 N '59. (MIRA 13:4)

1. Khar'kovskiy inzhenerno-stroitel'nyy institut. Predstavlena kafedroy teplogazosnabsheniya i ventilyatsii.
(Steam engineering) (Metallurgical furnaces--Cooling)

KOLOSKOV, Pavel Sergeyevich; SAVCHENKO, L.Ya., red.; GORKAVENKO, L.I., tekhn. red.

[Making use of the steam from the evaporation cooling of metallurgical furnaces] Ispol'zovanie para isparitel'nogo okhlazhdeniia metallurgicheskikh pechei. Kiev, Gos. izd-vo tekhn. lit-ry USSR, 1961. 83 p. (MIRA 15:3)
(Metallurgical furnaces--Cooling)
(Waste-heat engines)

KOLOBKOV, P.S., doktor tekhn.nauk, prof.

Selection of a method for driving forging-press machinery.
Izv. vys. ucheb. zav.; energ. 4 no.7:69-75 Jl '61. (MIRA 14:7)

1. Khar'kovskiy inzhenerno-stroitel'nyy institut. Predstavlena kafedroy teplogazosnabzheniya i ventilayatsii.
(Forging) (Machinery) (Fuel)

KOLOBKOV, P.S.

Reorganization of the steam condenser sections of machinery plants. Prom.energ. 16 no.6:26-29 Je '61. (MIRA 15:1)
(Machinery industry--Equipment and supplies) (Condensers (Steam))

KOLOBKOV, P.S., doktor tekhn.nauk, prof.

Installation of vackpressure turbines for operation on secondary steam in metallurgical plants. Izv.vys.ucheb.zav.; energ. 6 no.1:51-58 Ja '63. (MIRA 16:2)

1. Khar'kovskiy inzhenerno-stroitel'nyy institut. Predstavlena kafedroy teplogazosnabzheniya i ventilyatsii.
(Metallurgical plants) (Steam turbines)

KOLOBKOV, P.S., doktor tekhn.nauk; TSELUYKO, Yu.I., inzh.

Boiler water accumulators in converter-type waste heat boilers.
Energ. i elektrotekh. prom. no.4:24-26 O-D '64.
(MIRA 18:3)

KOLOBKOV, P.S., doktor tekhn. nauk

Energy requirements and organization of heat and power systems of oxygen-blown converter plants. Energ. i elektrotekh. prom. no.3:24-27 Jl-S '65. (MIRA 18:9)

KOLOBKOV, V.N.

Extraordinary weather phenomena in January and February 1960. (MIRA 13:10)
Meteor. i gidrol. no.10:48-50 O '60.
(Meteorology)

KOLOBKOV, V.P

USSR/ Physics - Luminescence

Card 1/1 Pub. - 12/51

Authors : Zelinskiy, V. V. and Kolobkov, V. P.

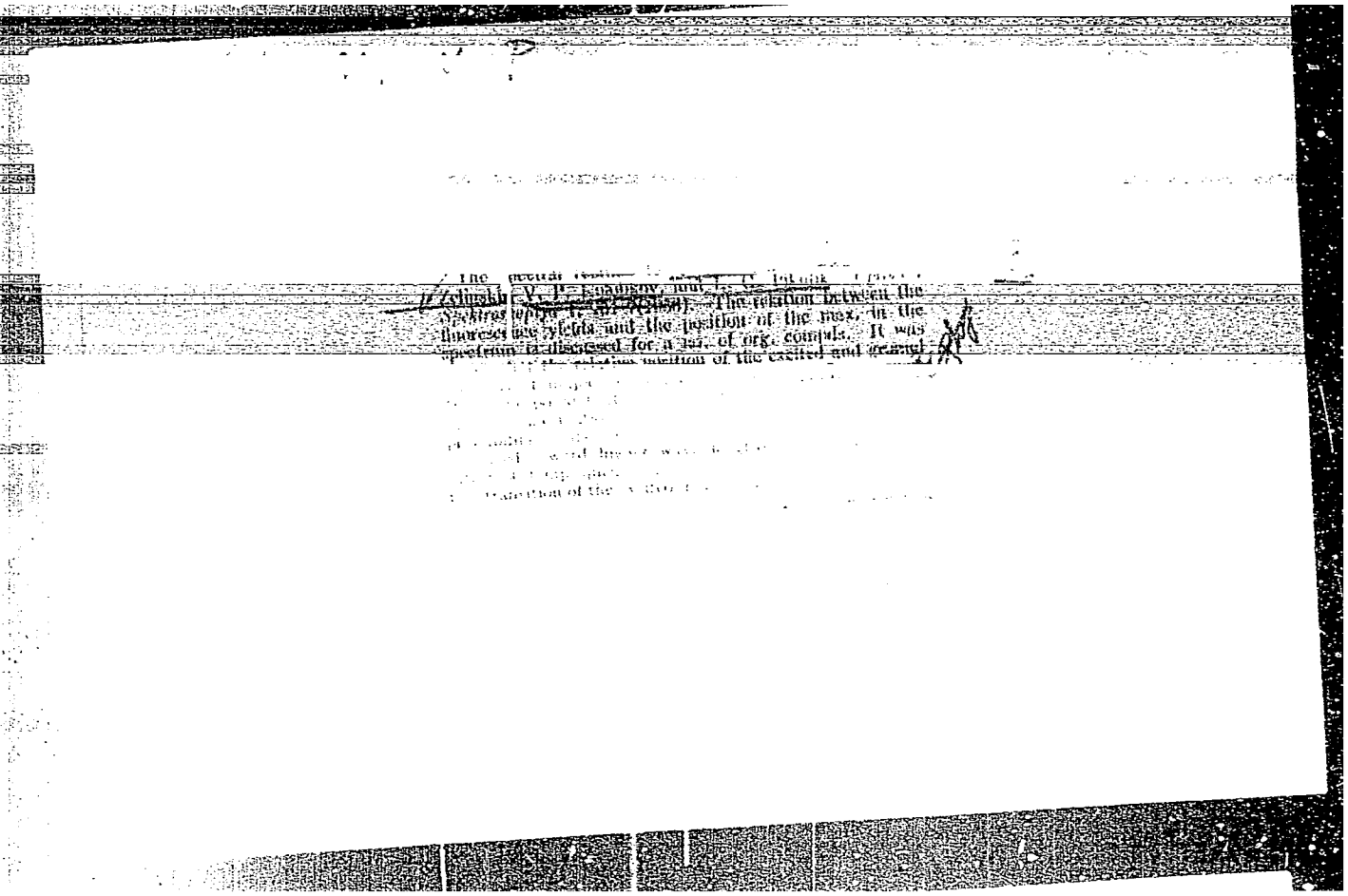
Title : Ratios of quantum yields of phosphorescence and fluorescence of phthalimides

Periodical : Dok. AN SSSR 101/2, 241-244, Mar 11, 1955

Abstract : Experiments intended to determine ratios of quantum yields of phosphorescence and fluorescence of various phthalimides are described. The results obtained are listed and summerized. Five references: 4 USSR and 1 USA (1940-1952). Tables.

Institution : .....

Presented by: Academician A. N. Terenin, August 26, 1954



Kolobkov, V.P.

K

USSR / Optics

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10407

Author : Zelinskiy, V.V., Kolobkov, V.P.
Inst : Not Given
Title : Increase in Quantum Yields of Phosphorescence Under the Influence of Potassium Iodide.

Orig Pub: Optika i spektroskopiya, 1956, 1, No 4, 560-570

Abstract: The authors determine the absolute quantum yields of phosphorescence of alcohol solutions 4-acetylamino-N-methylphtamide, 3,6-diacetylamino-N-methylphtalimide, β -acetylaminophtaline, β -naphtylamine, and ∝ -acetylaminonaphtaline at the temperature of liquid air. An investigation is made of the effect of potassium iodide, which is a fluorescence quencher, on the phosphorescence yield. It is shown that addition of potassium iodide to the solution leads to an increase in the phosphorescence yield with simultaneous decrease in the fluorescence yield. The authors believe

Card : 1/2

K

USSR / Optics

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10407

that a mechanism of quenching of fluorescence by potassium iodide and similar substances consists of increasing the probability of the transition of the excited molecules from the singlet state into the triplet state. The experimental procedure is described in detail.

Card : 2/2

KOLOBKOV, V.P.

Investigation of the property of complex organic molecules to fluoresce and to phosphoresce. V. V. Zelinskii, [illegible]

[illegible] Sci. U.S.S.R. [illegible] lation).—See C.A. 51, 17376.

USSR/Physics

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14384

Author : V. V. Zelinskiy, N. P. Emets, V. P. Kolobkov, L. G. Pikulik

Inst :

Title : Investigation of the capacity of complex organic molecules to fluoresce and phosphoresce

Orig Pub: Izv. AN SSSR, ser. fiz, 1956, 20, No 5, 507-513

Abstract: An investigation was made of the dependence of the probability of non-radiating transitions of excited molecules (from the unstable level to the metastable level r, from the unstable to the basic without q radiation, from the metastable to the basic with π radiation, and from metastable to the basic without radiation q_2) on the temperature, solvent and molecule structure. Probability of r is apparently only weakly dependent on temperature. Probability q_2 changes little with temperature for some organic compounds while for

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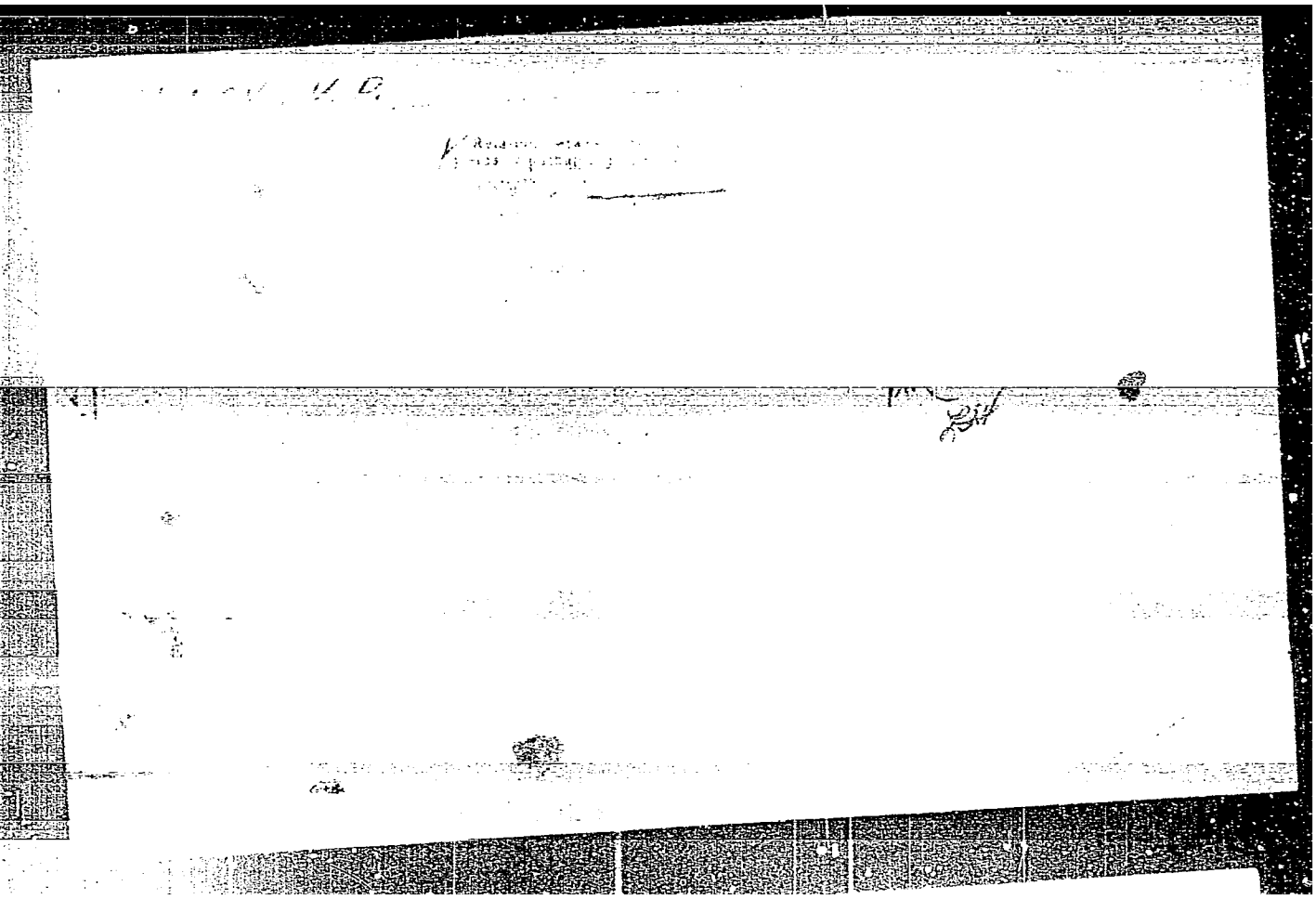
[illegible] levels. In related compounds (phthalimides) the influence of the structure properties and specific action of the solvent are of lesser imprtance. If the fluorescence spectra coincide for few solvents of a given substance, then the quantum yields are the same. The quantum yield relations of phosphorescence and fluorescence of the substituting phthalimides in various solvents are tabulated.



KOLOBKOV, V.P

AUTHORS: Zelinskiy, V.V., Kolobkov, V.P. and Pikulik, L.G. 51-3-23/24

TITLE: Dependence of the fluorescence and absorption spectra on the solvent for certain phthalimide derivatives. (Zavisimost' spektrov fluorestsentsii i pogloshcheniya ot rastvoritelya u nekotorykh proizvodnykh ftalimida).

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy), 1957, Vol.2, No.3, pp.402-405 (U.S.S.R.)

ABSTRACT: The effect of the solvent on the fluorescence and absorption spectra of phthalimide derivates consists of a displacement of the spectral band without alteration of its shape. This paper presents experimental results at room temperature for the 4-derivates (8 compounds such as 4-aminophthalimide), 3-derivatives (12 compounds such as 3-acetylamino-N-methylphthalimide) and 3,6-derivates (10 compounds such as 3,6-diacetylamine-N-methylphthalimide) of phthalimide. The maximum frequency of fluorescence or absorption is plotted against the solvent (23 solvents were used, e.g. water, glycerin, methanol, pyridine, acetone, CCl_4, etc). The solvents are given places on the abcissa in such a way that distances are proportional to the spectral displacement produced by that particular solvent on a standard substance which is 4-amino-N-methylphthalimide. For the fluorescence

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Dependence of the fluorescence and absorption spectra on the solvent for certain phthalimide derivatives. (Cont.) 51-3-23/24

spectral displacement sets of straight lines are obtained, for the absorption spectra the dependence is more complex. The effect of the solvent could not be correlated with its dielectric constant or its dipole moment and further work, e.g. on variation of the spectral displacement with temperature, is suggested.
There are 3 figures and 8 references, 7 of which are Slavic.

SUBMITTED: October 22, 1956.

AVAILABLE:

Card 2/2

Kolobkov, V. P.

20-3-10/52

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P., Kondaraki, N. I.

TITLE: On the Connection Between the Degree of Efficiency of Some Fluorescence Quenchers and the Position of the Fluorescence Spectrum (O svyazi effektivnosti deystviya nekotorykh tushiteley fluorestsentsii s polozheniyem spektra fluorestsentsii)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 391-394 (USSR)

ABSTRACT: The present paper carries out a qualitative investigation of the connection between the influence exercised by foreign admixtures upon the duration of the excited state and the position of the fluorescence spectrum. The degree of efficiency of the quencher (tushitel') is here characterized by the quantity

$$k = (\tau_1 - \tau_2)\eta / \tau_1 \tau_2 c$$

Here τ_1 denotes the duration of the excited state with the quencher lacking, τ_2 - the duration after a quencher has been added, with given concentration of the quencher, c - the concentration of the in mol/ℓ η - the viscosity of the

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On the Connection Between the Degree of Efficiency of Some Fluorescence Quenchers and the Position of the Fluorescence Spectrum

20-3-10/52

solvent in poises. The quantity which is directly measurable is the difference of the phases of the modulated fluorescence light of the illuminated and not illuminated solutions. The process used here increases the a accuracy of the determination of the degree of efficiency of the quenchers considerably. As foreign quenching bodies iodine triethylamine, potassium iodide, aniline, and diethylaniline are used. The authors investigated the effect of these admixtures upon the duration of the fluorescence of some 3-, 4- and 3.6 derivatives of the phtalimide of several of the solvents mentioned here. The individual results of these investigations are shown in form of a table. 2 diagrams illustrate the dependence of the degree of efficiency of the quenchers on the position of the fluorescence spectrum of the respective solution for various derivatives of the phtalimide. In certain cases the degree of efficiency increases with increasing frequency of the maximum of the fluorescence spectrum. A dependence of the degree of efficience on the position of the spectrum does not only exist, but it

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SOV/51-5-4-10/21

AUTHORS: Zelinskiy, V.V. and Kolobkov, V.P.

TITLE: On the Effect of Temperature on Fluorescence Spectra of Phthalimide Derivatives (K voprosu o vliyanii temperatury na spektry fluorestsentsii proizvodnykh ftalimida)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 4, pp 423-427 (USSR)

ABSTRACT: The fluorescence spectra of solutions of various phthalimide derivatives obtained at -196°C were compared with the 20°C spectra. Figs 1 and 2 show the dependence of the maximum frequency on solvent at 20°C; these dependences are given by straight lines I-VIII. The spectral maxima at - 196°C are shown by points joined by dashed lines: Ia-VIIIa. The substances studied were : I - 4-amino-N-methylphthalimide; II - 4-acetylamino-N-methylphthalimide; III - 3-amino-N-methylphthalimide; IV - 4-oxy-N-methylphthalimide; V - 3-methylacetylamino-6-acetylamino-N-methylphthalimide; VI - 3,6-diacetylamino-N-methylphthalimide; VII - 4-dimethylamino-N-methylphthalimide; VIII - 3-oxy-N-methylphthalimide. The solvents were divided into two groups. The first group consisted of "glassy" solvents: 1 - glycerin; 2 - tertiary butyl alcohol; 3 - methyl alcohol with 10% of water; 4 - ethyl alcohol; 5 - acetic anhydride; 6 - O-formic ether; 7 - propyl acetate; 8 - triethylamine;

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On the Effect of Temperature on Fluorescence Spectra of Phthalimide Derivatives

9 - diisoamyl ether; 10 - toluene. The second group consisted of ice-like solvents: 1* - water; 2* - acetic acid; 3* - methyl alcohol; 4* - benzaldehyde; 5* - menthol; 6* - thymol; 7* - ethyl acetate; 8* - pyridine; 9* - acetone; 10* - nitromethane; 11* - chloroform, 12* - α-chloronaphthalene; 13* - dioxane; 14* - anisole; 15* - diethyl ether; 16* - propyl bromide; 17* - chlorobenzene; 18* - benzene; 19* - carbon tetrachloride; 20* - n-hexane. It was found that the sequence of the effect of solvents on the fluorescence spectra, determined by the chemical nature of the solvent, which was observed at 20°C, was not obeyed at -196°C. This is ascribed to several factors, primarily to the compression or expansion with lowering of temperature and the change in densities of the substances studied. There are 2 figures and 5 Soviet references.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S.I. Vavilova (State Optical Institute imeni S.I. Vavilov)

SUBMITTED: October 7, 1957.

Card 2/2 1. Phthalimides--Spectra 2. Phthalimides--Fluorescence
3. Phthalimides--Temperature factors

SOV/51-5-4-19/21

AUTHORS: Golikova, L.Ye., Zelinskiy, V.V. and Kolobkov, V.P.

TITLE: Dependence of the Ratios of the Yields of Phosphorescence and Fluorescence on the Position of the Fluorescence Spectrum (Zavisimost' otnosheniy vykhodov fosforestsentsii i fluorestsentsii ot polozheniya spektra fluorestsentsii)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 4, pp 480-482 (USSR)

ABSTRACT: Zelinskiy and Kolobkov (Ref 1) measured the ratios (δ) of the quantum yields of phosphorescence and fluorescence of certain phthalimide derivatives at -196°C. Comparison of δ with the frequency of maxima in the fluorescence spectra (ν_{fl}^{max}) has shown that in all the compounds dealt with in Ref 1 there is a definite relationship between δ and ν_{fl}^{max}. The present paper reports similar relationships between δ and ν_{fl}^{max} obtained at -196°C for four phthalimide derivatives and for six other substances. Luminescence was excited with a mercury lamp using 365 or 313 mμ lines. Generally the same value of δ was obtained whether 365 or 313 mμ excitation was employed; the only exception was phenanthrene in ethyl alcohol. The results obtained are shown in a figure on p 480 and a table on p 481. The Roman numbers I-X used in the figure and the table on pp 480 and 481 represent the following substances: (I) 3-dimethylamino-6-methylacetylamino-phthalimide;

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Dependence of the Ratios of the Yields of Phosphorescence and Fluorescence on the Position of the Fluorescence Spectrum

(II) 3-amino-6-nitro-phthalimide; (III) 3-dimethylamino-6-nitro-phthalimide; (IV) 3-diphenylamino-N-methyl-phthalimide; (V) para-aminobenzoic acid; (VI) paradimethylaminobenzoic acid; (VII) methyl paradimethylaminobenzoate; (VIII) α-naphthol; (IX) β-naphthol; (X) β-naphthylamin. The Arabic numerals 1-16 represent the following solvents: (1) water; (2) benzene; (3) carbon tetrachloride; (4) acetic acid; (5) propyl acetate; (6) acetone; (7) methyl alcohol; (8) chloroform; (9) ethyl alcohol; (10) iso-octane; (11) pyridine; (12) butyl alcohol; (13) glue No. 234; (14) n-octane; (15) propyl formate; (16) iso-amyl formate. An increase of δ with increase of ν_{fl}^{max} was also observed in phenanthrene and fluorescein. Existence of a definite relationship between δ and ν_{fl}^{max} indicates that in all the substances studied there is no radiationless de-activation of the metastable level in the majority of solvents at

Dependence of the Ratios of the Yields of Phosphorescence and Fluorescence on the Position of the Fluorescence Spectrum

-196°C. In most of the cases the solvent effect, observed in media containing Br (Ref 5), which intensifies transitions to the metastable state is also absent. There are 1 figure, 1 table and 5 references, 3 of which are Soviet, 1 American and 1 translation.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S.I. Vavilova (State Optical Institute imeni S.I. Vavilov).

SUBMITTED: March 28, 1958

Card 3/3 1. Phthalimides--Phosphorescence 2. Phthalimides--Fluorescence
3. Phthalimides--Spectra

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P. 20-119-5-22/59

TITLE: Phosphorescence and Fluorescence Quantum Yield Ratios as Related to the Position of the Fluorescence Spectrum (Svyaz' otnosheniy kvantovykh vykhodov fosforestsentsii i fluorestsentsii s polozheniyem spektra fluorestsentsii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 5, pp. 922-925 (USSR)

ABSTRACT: First the authors shortly report on some previous works dealing with the same subject. Only a limited number of objects is suited for the dependence of this ratio q_{phos}/q_{fl} of the quantum yields of phosphorescence and fluorescence on the position of the fluorescence spectrum. The ratios q_{phos}/q_{fl} were investigated with some derivatives of phthalimide. The method for the determination of this ratio had been developed in an earlier work by the same author (reference 7). The fluorescence spectrum was determined from the standardized spectrum of the total

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radiation of the standardized phosphorescene spectrum. The results of the measurements of q_{phos}/q_{fl} with the derivatives of phthalimide are shown by three diagrams and are compared to the frequencies of the maxima of the corresponding fluorescence spectra. Greatest measuring accuracy is obtained when the ratio q_{phos}/q_{fl} is of the order 0,2 to 1. The just mentioned 3 diagrams show the following: diagram 1: q_{phos}/q_{fl} in dependence of the frequency ν_{fl}^{max} of the maxima of the corresponding fluorescene spectra at -196° for 3-methylacetylamino-6-acetylamino--N-methylphthalimide in 26 media of different chemical nature. 2: The dependences of q_{phos}/q_{fl} on ν_{fl}^{max} at -196° for 3,6-diacetylamino-N-methylphthalimide and 4-hydroxy--N-methylphthalimide. The curves corresponding to these substances have the same character and are almost identical. 3: The third diagram shows the same ratios for 3-hydroxy--N-methylphthalimide and 3-hydroxyphthalimide. The data

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SOV/20-121-2-33/53

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P., Reznikova, I. I.

TITLE: The Influence of the Structure of Organic Molecules on the Probability of Their Transition Into the Metastable State (Vliyaniye struktury organicheskikh molekul na veroyatnost' perekhoda v metastabil'noye sostoyaniye)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 2, pp. 315 - 318 (USSR)

ABSTRACT: The authors of the present papers give a report on investigations on mainly various N-methyl phthalimides; it turns out that the structure of these compounds has a clear influence on the amount of δ (δ is the ratio between the quantum yield of phosphorescence and of fluorescence) and thus on the position of ν_{fl}^{max} (ν_{fl}^{max} is the maximum in the spectrum of fluorescence). The following compounds were investigated: 3-hydroxy-N-methyl phthalimide, 4-hydroxy-N-methyl phthalimide, 3-acetyl amino-N-methyl phthalimide, 4-acetyl amino-N-methyl phthalimide, 3-methyl-acetyl amino-N-methyl phthalimide, 3-acetyl amino-6-amino-N-methyl phthalimide, 3-acetyl amino-6-dimethyl amino-N-methyl

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phthalimide, 3-diphenyl amino-N-methyl phthalimide, 3,6-di-acetyl amino-N-methyl phthalimide, and others as well as N-methyl phthalimides which contain a nitro group; furthermore phenyl-anthranilic acid and anthranilic acid, β-naphthylamine and phenyl-β-naphthylamine. The relation between δ and ν_{fl}^{max} for the various examined compounds is reproduced and compared in 4 diagrams. ν_{fl}^{max} varies between 20000 cm^{-1} and 26000 cm^{-1}, the δ-values of the various compounds differ very much between the different compounds (e.g. between 3-hydroxy-N-methyl phthalimide and 4-hydroxy-N-methylphthalimide at $\nu_{fl}^{max} = 24\text{-}25.10^3$ cm^{-1} for the 20- to 30-fold).

There are 4 figures and 5 references, 0 of which is Soviet.

PRESENTED: March 31, 1958, by A. N. Terenin, Member, Academy of Sciences, USSR

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SOV/20-121-2-33/53

The Influence of the Structure of Organic Molecules on the Probability of Their Transition Into the Metastable State

SUBMITTED: March 18, 1958

Card 3/3

Kolobkov, V.P.

24(8) PHASE I BOOK EXPLOITATION SOV/2809

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk

Termodinamika i stroyeniye rastvorov; trudy soveshchaniya... (Thermodynamics and Structure of Solutions; Transactions of the Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR, 1959. 295 p. 3,000 copies printed.

Ed.: M. I. Shakhparonov, Doctor of Chemical Sciences; Ed. of Publishing House: N. G. Yegorov; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for physicists, chemists, and chemical engineers.

COVERAGE: This collection of papers was originally presented at the Conference on Thermodynamics and Structure of Solutions sponsored by the Section of Chemical Sciences of the Academy of Sciences, USSR, and the Department of Chemistry of Moscow State University, and held in Moscow on January 27-30, 1958. Officers of the conference are listed in the Foreword. A list of other reports also read at the conference, but not included in this book, are given. Among the problems treated in this work are: electrolytic solutions, ultrasonic measurement, dielectric and thermodynamic properties of various mixtures, spectroscopic analysis, etc. References accompany individual articles.

22(1) 24(3) SOV/3-59-4-35/42

AUTHORS: Kolobkov, V.P., and Barkauskas K.M., Doctor of Physico-Mathematical Sciences, Professor

TITLE: This was Done at a VUZ

PERIODICAL: Vestnik vysshey shkoly, 1959, Nr 4, p 80 (USSR)

ABSTRACT: The Kaunas Polytechnical Institute has at present an up-to-date source of a powerful magnetic field, convenient for use. It enables instructors and post-graduate students to solve successfully many problems in their scientific work. The source - an electromagnet - was made in the workshop of the Chair of Physics. Among the basic data of the device given are the following: total weight - 5,000 kg; weight of the iron core - 4,000 kg; the ratio of the weight of iron to the weight of copper is 11 : 1. The working diameter of the pole shoes is 240 mm. The space between the pole shoes can easily be changed from 0 mm to 300 mm. The winding is oil-cooled. The yoke and the pole shoes are of Armko steel. The maximum power of the current, required for feeding the electromagnet, is about 60 kw. The magnetic field mostly required for

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SOV/51-6-3-23/28

AUTHORS: Zelinskiy, V.V., Kolobkov, V.P. and Krasnitskaya, N.D.

TITLE: On the Problem of Temperature Quenching of Fluorescence (K voprosu o temperaturnom tushenii fluorestsentsii)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 3, pp 417-419, (USSR)

ABSTRACT: The authors discuss the increase of the fluorescence yield which occurs in certain phthalimide and aminomaleinimide and derivatives on lowering of temperature from +20 to -180°C. They show that apart from "freezing" of the motion of various parts of a fluorescing molecule, this increase is due to weaker temperature quenching (redistribution of molecules at the excited vibrational levels), as well as to changes in the mutual positions of the potentials of the ground (Fig.2, curve 3) and excited (Fig.2, curves 1 and 2 at +20 and -180°C respectively) states of the molecule which occur on lowering of temperature. The point of intersection of the ground and excited potential is much further away from the excited curves minimum at low temperatures, and this makes the excited-to-ground transition

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On the Problem of Temperature Quenching of Fluorescence

more difficult. There are 2 figures and 4 Soviet references.

SUBMITTED: June 28, 1958

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24(7), 5(4)

SOV/48-23-10-38/39

AUTHORS: Zelinskiy, V. V., Kolobkov, V. P., Reznikova, I. I.

TITLE: An Interrelation Between the Probability of the Transition of Complex Organic Molecules Into a Metastable State and Spectral Composition of Radiation

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1269-1272 (USSR)

ABSTRACT: Whereas all other articles published in this number of the periodical are publications of lectures held at the 12. All-Union Spectroscopy Conference (November 19-26, 1959), the present paper is a reproduction of a lecture delivered at the 11. All-Union Conference for Theoretical Spectroscopy (Moscow, December 2 - 10, 1957). In the introduction the results obtained by two earlier papers (Refs 1, 3) are discussed, which dealt with the investigation of the interrelation between transition probabilities into a metastable state and the position of the fluorescence bands. Among others, the fluorescence spectra of phthalimide derivatives in 37 different media had been investigated and the ratios of the phosphorescence- and fluorescence yields q_{phos}/q_{fl} had been determined in dependence of the fluorescence maximum ν^{max}_{fl}

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An Interrelation Between the Probability of the Transition of Complex Organic Molecules Into a Metastable State and Spectral Composition of Radiation

(cf. Fig 1). This ratio increases exponentially with increasing ν_{fl}^{max}. In this respect a number of further investigations was made. Figure 2 shows the same diagram for α- and β-naphthols and anthrazyl acid. The former was investigated in four different media, the latter in 17. Most of the measuring points are located on an (exponential) curve. ν_{fl}^{max} varied from 21,200 to 25,900 cm^{-1}, the corresponding yield ratio only from 0.01 to 0.2. These results are then discussed. The transition probability into a metastable state was investigated according to three methods: by means of the spectral dependence of q_{fl} at 20°, of q_{phos}/q_{fl} at -196°, and by means of the dependence of the k-value at 20° on ν_{fl}^{max}. These functions are shown by figure 3. The details resulting from the diagrams for 4-amino-N-methyl phthalimide, 4-acetyl-amino-N-methyl phthalimide, and 3-methyl-acetylamino-6-acetylamino-N-methyl phthalimide are discussed. All three methods gave results which were in qualitative agreement as

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An Interrelation Between the Probability of the Transition of Complex Organic Molecules Into a Metastable State and Spectral Composition of Radiation

to the spectral dependence of the transition probabilities. There are 3 figures and 6 Soviet references.

ASSOCIATION: Gos. opticheskiy institut im. S. I. Vavilova
(State Optical Institute imeni S. I. Vavilov)

Card 3/3

5.3100
~~5(4), 5(3)~~

67925
SOV/20-129-5-35/64

AUTHORS: Zhmyreva, I. A., Zelinskiy, V. V., Kolobkov, V. P., Krasnitskaya, N. D.

TITLE: A Universal Scale of the Effect of Solvents on the Electron Spectra of Organic Compounds

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 5, pp 1089-1092 (USSR)

ABSTRACT: The authors give a short survey on the publications dealing with this subject and mention the papers by A. I. Kipriyanov (Ref 1), V. V. Zelinskiy, V. P. Kolobkov and L. G. Pikulik (Ref 2), V. V. Zelinskiy, V. P. Kolobkov and I. I. Reznikova (Ref 5). They suggest 4-amino-N-methyl-phthalimide as standard substance by means of which they construct the scale mentioned in the title. If the fluorescence spectra frequencies are plotted on the ordinate and the various solvents on the abscissa (at distances which correspond to the differences between the standard substance) the frequencies of the maxima of the fluorescence spectra of most of the organic substances for a certain solvent are on a straight line. Figure 1 shows such diagrams for some phthalimide derivatives. In the absorption

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A Universal Scale of the Effect of Solvents on the Electron Spectra of Organic Compounds

spectra the points are on a curve. The reason for the different effect of the solvent on the fluorescence- and absorption spectrum will be dealt with by the authors at another place. Figure 2 shows the position of the maxima of the fluorescence spectra in different solvents for o-methoxybenzoic acid, aminonaphthaminophenazine and its derivatives, malimide derivatives, acridine and 2-aminoacridine. The authors set up a scale for 79 solvents in which zero is the position of the 4-amino-N-methyl-phthalimide vapor, 100 - the position of the spectrum of this substance in water (Table 1). Certain rules governing the order of the solvents on this scale are found: the maxima ν_{fl}^{max} of the fluorescence spectra are in all solvents containing hydroxyl groups between 16000 and 19000 cm^{-1} where the alcohols form a subgroup between 17600 and 19600 cm^{-1}. For the esters ν_{fl}^{max} is between 18800 and 21600 cm^{-1}, for ether between 21700 and 22050 cm^{-1}, for aromatic hydrocarbons between

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A Universal Scale of the Effect of Solvents on the Electron Spectra of Organic Compounds

22000 and 22500 cm^{-1}, and for saturated aliphatic hydrocarbons ν_{fl}^{max} is 24400 cm^{-1}. Differences in the state of aggregation do not influence the position of the spectrum, which was proved with menthene, stearic acid, solid and liquid diethyl oxalate. There are 2 figures, 1 table, and 7 references, 3 of which are Soviet.

PRESENTED: July 15, 1959, by A. N. Terenin, Academician

SUBMITTED: July 6, 1959

KOLOBKOV, V. P. Cand Phys-Math Sci -- (diss) "The role of metastable state in extinguishing fluorescense in organic compounds," Minsk, 1960, 16 pp, 180 cop. (Belorussian State U. Im Lenin) (KL, 44-60, 128)

KOLOBKOV, V. P.

S/051/60/008/03/027/038
E201/E191

AUTHORS: Zhmyreva, I.A., Zelinskiy, V.V., Kolobkov, V.P., Kochemirovskiy, A.S., and Reznikova, I.I.

TITLE: On the Problem of the Effect of Solvents on the Electronic Spectra of Organic Molecules

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 3, pp 412-414 (USSR)

ABSTRACT: Bakhshiyev (Refs 7, 8) derived relationships between the effect of solvents on the electronic spectra of organic compounds and the refractive indices and dielectric constants of the solvents. According to Bakhshiyev the experimental results fit excellently the formulae derived by him. Unfortunately if one substitutes into Bakhshiyev's formulae the values of A and $\Delta\nu_{эл}$ for a wider range of solvents than those investigated by him, the experimental and theoretical dependences no longer agree; such disagrement can be seen clearly in Fig 1 which shows the dependence of $\Delta\nu_{эл}$ on A for 4-aminophthalimide. Here $\Delta\nu_{эл}$ is the frequency shift due to a solvent and

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On the Problem of the Effect of Solvents on the Electronic Spectra of Organic Molecules

$$A = \frac{2\varepsilon - 1}{2\varepsilon + 2} + p\,\frac{2n^2 - 1}{2n^2 + 2}$$

where ε is the dielectric constant and n is the refractive index of the solvent. Experimental data also disagree with a theoretically predicted inverse proportionality between the effect of solvents on the spectra and the molecular radii of the solvents (Fig 2). The authors follow earlier workers (Refs 9-13) and suggest that it is wrong in principle to attempt description of the effect of solvents on the spectra using macro-properties of these solvents, since such effect is primarily due to short-range intermolecular interactions governed by micro-properties of the solvents. A semblance of the relationship between the shift in the electronic frequencies and the dielectric constant is due to the fact that the dielectric constant is governed by the micro-properties of the solvents. There are 2 figures and 13 references, of which 6 are Soviet, 1 English, 2 Japanese and 4 German.

Card 2/2

SUBMITTED: August 12, 1959

S/051/60/009/003/013/019/XX
E201/E191

AUTHORS: Viktorova, Ye.N., Zhmyreva, I.A., Kolobkov, V.P., and Saganenko, A.A.

TITLE: An Investigation of the Duration of Phosphorescence in Solutions of Organic Compounds at -196 °C

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, No 3, pp 349-352

TEXT: The effect of various external and internal molecular factors on the probability (r) of transitions of excited molecules to a metastable state is related to the ratio (δ) of the quantum yields of phosphorescence and fluorescence at low temperatures (e.g. -180 or -196 °C). For long wavelength phosphorescence

$$\delta = \frac{r}{p} \cdot \frac{\pi}{\pi + q_2}$$

where p is the probability of a fluorescent transition, π is the probability of emission of radiation on transition from the metastable state to the ground state, and q_2 is the probability of quenching in the metastable state. The authors studied the duration of phosphorescence (τ_{phos}) in order to obtain information on quenching in the metastable state at -196 °C and to find to what

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An Investigation of the Duration of Phosphorescence in Solutions of Organic Compounds at -196 °C

extent a change of δ due to an external medium is reflected in the probability r. Tables 1 and 2 list the values of τ_{phos} ($\tau_{\phi oc}$) and δ at -196 °C for 17 compounds in 21 solvents. The compounds dealt with in Table 1 are:

(I) 3-acetylamino-N-methylphthalimide,
(II) 4-acetylamino-N-methylphthalimide,
(III) 3,6-diacetylamino-N-methylphthalimide,
(IV) 3-methylacetylamino-6-methylphthalimide.

The compounds listed in Table 2 are:

(V) 3-methylacetylamino-N-methylphthalimide,
(VI) 4-methylacetylamino-N-methylphthalimide,
(VII) 3-hydroxy-N-methylphthalimide,
(VIII) 4-hydroxy-N-methylphthalimide,
(IX) 3-amino-6-nitro-N-methylphthalimide,
(X) 3-dimethylamino-6-methylacetylamino-N-methylphthalimide,
(XI) 3-dimethylamino-6-acetylamino-N-methylphthalimide,

Card 2/3

ZHMYREVA, N.A.; ZELINSKIY, V.V.; KOLOBKOV, V.P.; KOCHERMINOVSKIY, A.S.; REZNIKOVA, I.I.

Current status of the problem of the effect of the solvent on the spectra of complex organic molecules. Izv.AN SSSR.Ser. fiz. 24 no.5:596-600 My '60. (MIRA 13:5)
(Spectrum, Molecular)

BORGMAN, V.A.; ZHMYREVA, I.A.; ZELINSKIY, V.V.; KOLOBKOV, V.P.

Basic processes in the deactivation of excited states of complex organic molecules. Izv.AN SSSR.Ser.fiz. 24 no.5: 601-606 My '60. (MIRA 13:5)
(Molecules)

AUTHORS: Borgman, V. A., Zhmyreva, I. A., Zelinskiy, V. V., Kolobkov, V. P.

S/020/60/131/04/018/073
B013/B007

TITLE: The Influence Exerted by Heavy Halogens on the Probability of Transition to the Metastable State and the Probability of Deactivation of This State

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 4, pp 781-784 (USSR)

TEXT: The present paper is intended to show more clearly than was hitherto done that the action of extinguishers of the halide type on the fluorescence of organic compounds results in a higher probability (r) of transition of the excited molecule to the metastable state and to show the influence exerted by these extinguishers on the probabilities q_2 and $\varkappa$ respectively of transitions from the metastable state to the ground state with and without emission. Besides the salts of hydriodic acid, the authors used bromides as extinguishers. q_2 is less increased by weak bromide extinguishers. In order to obtain a higher q_{phosph} in some cases and clearer extinction in others, higher concentrations of iodides were used. Table 1 contains the absolute yields q_{fluor} and q_{phosph} of fluorescence and phosphorescence, as well as the rates of damping ν^* of fluorescence at certain concentrations of the salts of bromides and iodides in

The Influence Exerted by Heavy Halogens on the Probability of Transition to the Metastable State and the Probability of Deactivation of This State

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solutions of organic substances in methyl alcohol. The damping of phosphorescence was carried out by means of a device developed by B. Ya. Sveshnikov and P. I. Kudryashov, and short-time recordings were carried out by means of the τ-meter designed by N. A. Tolstoy and P. P. Feofilov. Different salts of one and the same halogen hydracid have the same effect: At the same molar concentration they have the same effect on the yield of fluorescence and the duration of phosphorescence. Next, the authors describe an attempt made to prove that there are no further complicating circumstances and errors in measurement. The use of bromides and higher concentrations of iodides made it possible to illustrate clearer cases of increase in q_{phosph} under the action of extinguishers. Details are described. In all cases the duration of phosphorescence decreases considerably with increasing q_{phosph}. A qualitative comparison of the yield of luminescence and the duration of phosphorescence shows in some cases that also the presence of iodine in the solution increases π considerably. Halogens have a particularly strong effect on π if bromine and iodine are contained in the phosphorescent molecule. The deactivation of only 30 per cent of all adsorbing molecules falls to the portion of radiationless processes. Introduction of

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iodine into the molecule of the luminescent substance increases $\varkappa$ considerably. This holds also for 3-acetyl-N-methyl phthalimide. q_2 is usually smaller than $\varkappa$. Introduction of iodine into the solution increases q_2 in most cases to such an extent that the extinction on the metastable level reduces not only $q_{rad.sum}$ but also q_{phosph}. When using a less active extinguisher - bromine and high concentrations of iodine - one obtains good examples for the increase of q_{phosph} and, consequently, of $q_{rad.sum}$ under the action of the extinguisher. The authors thank B. Ya. Sveshnikov, P. I. Kudryashov, V. A. Arkhangel'skaya, and T. K. Razumova for having put the necessary instruments at their disposal and for their valuable help. There are 1 table and 8 references, 2 of which are Soviet.

PRESENTED: October 26, 1959, by A. A. Lebedev, Academician

SUBMITTED: October 7, 1959

35535
S/020/62/142/006/007/019
B104/B108

AUTHORS: Zelinskiy, V. V., and Kolobkov, V. P.

TITLE: Applicability of the dielectric constant as a criterion of interaction in solutions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 6, 1962, 1272-1275

TEXT: The interaction between the molecules of a solvent and a solute takes place via charges localized at the ends of the molecules of the solute and their close environment. The forces acting between the molecules are estimated. The overall effect on a molecule is determined chiefly by the charge of the atom of the solvent molecule which is closest to the pole of the molecule. The total dipole moment of two liquids and their dielectric constants may differ very much although the microfields of all atoms in the solvent molecules are completely equal. Consequently, ε is no true criterion for the interaction forces between neighboring molecules. This can only be the case when there is sufficient spacing between the molecules. Detailed computation shows that the effect of

molecules at a greater distance is less than that of neighboring molecules. The effect of large molecular aggregates of the solvent on a molecule of the solute is always less than the electrostatic effect of a neighboring molecule of the solvent. Reference is made to Ya. I. Frenkel' (Sobr. izbr. soch., 3, Izd. AN SSSR, 1959, p. 217). There are 19 references: 9 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: N. Bailiss, J. Chem. Phys., 18, 292 (1950); V. Ooshika, J. Phys. Soc. Japan, 9, 594 (1954); N. Mataga, Y. Kaifu, M. Kouzumi, Bull. Chem. Soc. Japan, 29, 115, 165 (1956); E. Kosower, J. Am. Chem. Soc., 80, 3253 (1958).

PRESENTED: February 27, 1961, by A. A. Lebedev, Academician

SUBMITTED: February 16, 1961

L 18735-63 EPF(c)/EWT(m)/BDS Pr-4 RM/WW/MAY

ACCESSION NR: AT3002191 S/2941/63/001/000/0028/0036

59

AUTHORS: Zelinskiy, V. V.; Kolobkov, V. P.; Saganenko, A. A.

TITLE: Relation between luminescence and spectral characteristics of xanthene dyes

SOURCE: Optika i spektroskopiya; sbornik statey. v. 1: Lyuminestsentsiya. Moscow, Izd-vo AN SSSR, 1963, 28-36

TOPIC TAGS: luminescence, fluorescence, transition, stationary state, spectrum, spectroscopy

ABSTRACT: The absolute quantum yields of luminescence and the absorption and emission spectra of a set of arbitrary fluoresciens have been measured in solid alcohol solutions at -196C. Main features of the measurement technique are given by V. V. Zelinskiy and V. P. Kolobkov (Opt. i Spectr., 1, 560, 1956). It is shown that the change in fluorescent yield in the transition state from one body to another is uniformly connected with the corresponding change in the position of the electronic spectra. The authors conclude that in xanthene dyes (as well as in other organic compounds) the effect of the molecular structure on the

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probability of a radiationless deactivation is governed primarily by mutual change in position and form of potential surfaces in corresponding electronic states. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 12Jan62 DATE ACQ: 19May63 ENCL: 00

SUB CODE: PH NO REF SOV: 017 OTHER: 008

Card 2/2

ZELINSKIY, V.V.; KOLOBKOV, V.P.

Separation of specific and universal interactions in solutions. Part 1. Opt. i spektr. 16 no.2:345-351 F '64. (MIRA 17:4)

[illegible] (m)/EWP(j) IJP(c) [illegible]

AP5003040 [illegible]/0151

AUTHOR: Kudryashov, P. I.; Kolobkov, V. P.; Cherkasov, A. S.

TITLE: Luminescence of Eu-dibenzoylmethanate under pulsed excitation

SOURCE: [illegible] spektroskopiya, v. [illegible], no. [illegible]

TOPIC TAGS: luminescence, organic luminor, chelate, [illegible] emission, optical pumping

ABSTRACT: The authors have obtained data which show that the changes produced [illegible] in the luminescence of [illegible] emission, as [illegible] v. [illegible], 1963). The tests were made [illegible] in ethyl alcohol [illegible] in sectional resonator [illegible] long, at different EuD_3 concentrations (1.5×10^{-4} — 5×10^{-3} mole/liter) and at different temperatures (from -160 to -110C). The time sweep of the EuD_3 luminescence pulse was investigated as a function of various factors for the brightest fundamental emission line (613 nm). A hypothesis is advanced that the

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[illegible] can be attributed to reabsorption of the emission from the Eu[illegible] ion, [illegible]der sufficiently strong excitation. Additional confirmation of the [illegible]ypothesis was provided by tests [illegible], which showed that the emission pulse varied with all the [illegible] factors in [illegible]n for both the 597- and 613-nm lines. [illegible] A. Zhmyrev, [illegible], and G. A. Mokeyeva for great help during the work, and T. M. Yember [illegible] the EuD_3 used." Orig. art. has: 2 figures.

[illegible]: None

[illegible] ENCL: 00 SUB CODE: OP EC

[illegible] SOV: 000 OTHER: 002 ATD PRESS: 3191

Card 2/2

L 24287-66 EWT(l)/EWT(m)/EWP(j) RM

ACC NR: AP6007002 SOURCE CODE: UR/0051/66/020/002/0303/0307

AUTHOR: Zhmyreva, I. A.; Kolobkov, V. P.; Volkov, S. V.

ORG: none

TITLE: Triplet-triplet absorption spectra of solid solutions of certain organic compounds

SOURCE: Optika i spektroskopiya, v. 20, no. 2, 1966, 303-307

TOPIC TAGS: absorption spectrum, solid solution, organic solvent, nonmetallic organic derivative, organic amide, fluorescence quenching, halogenated organic compound

ABSTRACT: To obtain more data on the mechanism and kinetics of formation of metastable states of organic molecules, the authors determined at low temperature the spectra of the triplet-triplet absorption of alcohol solutions of several aminobenzoic acids and anthracene derivatives, and investigated by means of triplet-triplet absorption the action of specific fluorescence quenchers on the population of the metastable state. The measurements were based on a comparison, at fixed wavelengths, of the transmission of samples under additional intense excitation capable of creating a sufficiently large population of the metastable states, with the transmission in the absence of excitation. The apparatus is described in detail. The triplet-triplet absorption method was also used to study the action of heavy halogens on the population of the metastable states. In the case of anthracene, a substantial increase in the triplet-triplet absorption density in the presence of bromides was dis-

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ACC NR: AP6007002

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covered. It was demonstrated by the same token that the quenching of fluorescence in anthracene derivatives by halides is governed by an enhancement of the transmission of excited molecules into the metastable state. The authors thank A. S. Cherkasov and V. I. Shirokov for supplying the substances and for valuable advice on questions of technique. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 30Dec64/ ORIG REF: 002/ OTH REF: 007

Card 2/2 FV

L 27384-66 EWP(e)/EWT(m) WH/JD/JG

ACC NR: AP6015595 SOURCE CODE: UR/0368/66/004/005/0434/0441

AUTHOR: Kudryashov, P. I.; Veynberg, T. I.; Kolobkov, V. P.

43
B

ORG: none

TITLE: Luminescence properties of glasses activated with erbium

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 5, 1966, 434-441

TOPIC TAGS: luminescence, luminescence quenching, luminescence spectrum, erbium compound, activated crystal

ABSTRACT: Investigations were made of the spectra, intensities, and duration of luminescence of a large number of inorganic glasses of different composition. The absorption and luminescence bands which were observed were identified as transitions between the definite ^5L_J - levels of the Er^{3+} ion. The main part of the luminescence output for all compositions was shown to be due to the $^4I_{13/2} \rightarrow {}^4I_{15/2}$ transition band, with $\nu_{max} = 6500\ cm^{-1}$. The 6500 cm^{-1} band was very intensive in silicate glasses (65% SiO_2) and in calcium aluminate glasses. The majority of phosphate glasses had intensities 3 to 5 times smaller than in the glasses mentioned above. Boron-based glasses had especially weak luminescence. The luminescence duration in erbium-containing glasses in general changes as intensity changes. Silicate and calcium aluminate compositions displayed the longest duration of luminescence (1.5×10^{-2} sec); the shortest (5×10^{-4} sec) was found in boron glasses. The effect

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ACC NR: AP6015595

of glass composition on the quenching of erbium luminescence can be determined mainly from the variation in the probability of nonradiative deactivation of the $^4I_{13/2}$ metastable state. A change in activator concentration from 0.5 to 8 wt% caused a decrease in the lifetime from 1.5×10^{-2} to 0.6×10^{-2} sec. Temperature changes within a range from +20 to -196C had no effect on the intensity and duration of luminescence. A diagram of the crystal splitting of the $^4I_{13/2}$ and $^4I_{15/2}$ levels of Er^{3+} ions in glass was constructed on the basis of results from the investigation of the influence of temperature on the band structure. Orig. art. has: 4 figures and 3 tables.

[JA]

SUB CODE: 20/ SUBM DATE: 09Apr65/ ORIG REF: 002/ OTH REF: 012/ ATD PRESS: 4259

Card 2/2

ACC NR: AP6030720 (A,N) SOURCE CODE: UR/0368/66/005/002/0228/0235

AUTHOR: Zhmyreva, I. A.; Kolobkov, V. P.; Veynberg, T. I.; Makhlina, G. A.

ORG: none

TITLE: Study of the luminescence of glass activated by holmium

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 5, 1966, 228-235

TOPIC TAGS: luminescence, holmium, rare earth metal, glass, absorption band, energy band structure, radiation intensity, quantum generator

ABSTRACT: This study was made in order to obtain additional data on the mechanism of interaction of rare earth activators with glass inasmuch as such information might make it possible to utilize glass in the design of optic quantum generators. The absorption and luminescence characteristics of glass of various composition activated by holmium were studied in the 4300-30000 cm $^{-1}$ range at room temperature as well as low temperature. A diagram of the energy levels and the transitions between them was drawn for the trivalent holmium ion in the glass on the basis of the position of the absorption and luminescence bands. The luminescence of holmium in the glass was concentrated predominantly in the 5000 cm^{-1} band (transition 5/7 → 5/8). Therefore, the effect of glass composition, activator concentration, and temperature on the form, position, intensity, and duration of the 5000 cm^{-1} was studied in detail. A level

 UDC: 666.11.01:535.34137

splitting diagram was drawn for holmium levels 5/7 and 5/8 in the glass on the basis of change of the 5000 cm^{-1} band structure with temperature. The experimental results show that 1) the intensity and duration of luminescence in the 5000 cm^{-1} band vary greatly in the different glass compositions, 2) the BS-14 alumocalcium glass compositions have the brightest luminesce and simultaneously the longest luminescence amounting to about 4 x 10^{-3} sec at Ho_2O_3 concentrations of 1% by weight, 3) the luminescence duration in the different glass compositions is not correlated with their luminescence intensity, 4) the quenching of luminescence in BS-14 glass compositions sets in at quite low Ho_2O_3 concentrations and substantially decreases the luminescence duration even at an increase of Ho_2O_3 concentration from 0.25 to 0.5, and 5) the temperature effect on the intensity and duration of luminescence in the various glass composition is relatively slight. The authors thank M. V. Yepifanov for his aid in the work with the ultra-traumeter and V. A. Sokolov and L. N. Galkin for measuring the intensity and duration of luminescence of some of the samples. Orig. art. has: 4 figures and 3 tables.

SUB CODE: 20,11/ SUBM DATE: 05Apr65/ ORIG REF: 003/ OTH REF: 007

38070
S/191/62/000/006/014/016
B117/B138

15.8500

AUTHOR: Kolobov, Ye. I.

TITLE: Shrinkage of oriented polymers during annealing

PERIODICAL: Plasticheskiye massy, no. 6, 1962, 62 - 63

TEXT: The isothermal shrinkage of oriented crystalline polymers in the direction of extension was investigated on polyethylene and polytetrafluoroethylene (fluoroplast-4). The extent to which the rules observed during phase transformations of isotropic polymers apply to the oriented phase of crystalline polymers was to be clarified. The length of polymers (films 0.04 to 0.1 mm thick) oriented at room temperature (20°C) was measured with a microcomparator before and after annealing (error: +0.06% to -1.06%). The time dependence of the shrinkage of elongated polytetrafluoroethylene samples (degree of elongation 280%, up to the development of "necking" over the entire sample length), ascertained at 100, 200, 300, and 333°C, showed that a definite final size of the sample exists for each temperature during isothermal shrinkage. Shrinkage increases with increasing temperature. This may be traced back to irreversible reduction of the degree of

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oriented crystallization. Measurement of the residual elongation in samples annealed for 2 hrs at a given temperature showed that the elongation remaining after isothermal shrinkage decreases for higher annealing temperatures and disappears when the melting point is reached. Samples elongated at different temperatures have parallel shrinkage curves. Conclusion: The melting curve of polytetrafluoroethylene at 333°C and its disorientation curves having the same shape at lower temperatures confirmed the view that orientation and disorientation of crystalline polymers are due to phase transformations. Melting process and disorientation are thus equally time-dependent. The phase transformation of oriented crystalline polymers takes place over a wide temperature range, from elongation up to melting. The amount of residual elongation corresponding to each temperature shows that, at this temperature, only part of the crystalline phase undergoes phase transformation. This part increases with increasing temperature. There are 2 figures. The English-language reference is: R. A. Horsley, H. A. Nancarrow, Brit. J. Appl. Phys., 2, 345 (1951).

S/193/60/000/011/004/022
A004/A001

AUTHORS: Safronov, N. N., Matsyuk, L. R., Kolobkov, Yu. M.

TITLE: The МСП-1 (MSP-1), МСП-2 (MSP-2) and МСП-4 (MSP-4) Machines for the Heat-Bonding of Thermoplastic Films

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, 1960, No. 11, pp.9-11

TEXT: In 1960 one of the Institutes developed several types of machines for the heat-bonding of large-size articles of thermoplastic films by heat-transfer agents. The MSP-1 machine is designed for the heat-bonding of large-size polyethylene films of 25 to 150 μ thickness. The machine travels along the table on two guide rails and can produce rectilinear T-shaped and lap seams. To avoid the molten polyethylene sticking to the rolls, heat-bonding is effected through a cellophane or fluorplastic-4 film. The heating temperature of the rolls can be evenly controlled in the range of 100 - 300°C and maintained constant with the aid of the automatic ЭПД-12 (EPD-12) thermoregulator. The machine design makes it possible for the bonding head to copy a table unevenness in the range of ± 50 mm. The bonding speed can be regulated from 0.5 to 10 m/min, the network voltage is 220 v, the machine is lever-and push-button-controlled, its weight is 115 kg.

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A004/A001

The МСП-1 (MSP-1), МСП-2 (MSP-2) and МСП-4 (MSP-4) Machines for the Heat-Bonding of Thermoplastic Films

The machine can be also used for the bonding of other polymer films, e. g. polyvinyl chloride up to 100μ thickness, "ftorlon" [translator's note: most probably the commercial brand of a fluor polymer] up to 30-40μ thickness, etc. The MSP-2 machine is also intended for the welding of polyethylene films particularly of a thickness of less than 60μ. Bonding is effected by unilateral contact of the material with a gas heat-transfer agent, which is heated up to 180 - 250°C and gets on the material through a jet comb. The exact seam width is ensured by two endless steel strips. The superiority of the MSP-2 machine is characterized by the possibility of heat-bonding the films without intermediate layer between heat-transfer agent and material being bonded. A deficiency is the lower bonding speed of the machine - up to 6m/min. The machine is stationary, i. e. the article being heat-bonded is moving. The MSP-4 machine is designed for the semi-automatic heat-bonding of fluorplastic films and can be successfully used for the bonding of fabric film materials up to 400μ thickness. The machine is a stationary installation with two bonding heads ensuring a continuous bonding process of rectilinear T-shaped and lapped seams by bilateral heating of the material. Two

ACC NR: AP7001405 (A) SOURCE CODE: UR/0413/66/000/021/0107/0108

INVENTOR: Lashkov, K. A.; Klimova, T. N.; Fomichev, V. A.; Matsyuk, L. N. Kolobkov, Yu. M.

ORG: none

TITLE: Device for heat-pulse welding of polymer films. Class 39, No. 187991

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 107-108

TOPIC TAGS: polymer film, polymer ~~film welding, heat pulse~~ heat resistance, welding ~~device~~ equipment, ~~closed contour article, curvilinear lap weld~~

ABSTRACT: An Author Certificate has been issued for a device for heat-pulse welding of polymer films. The device consists of two insulation blocks, heating elements

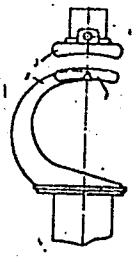

Fig. 1.

1 - Bottom block; 2 - s-shaped support; 3 - top block.

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ACC NR: AP70001405

in the form of metal strips with copper inserts, and a support. To obtain closed-contour articles with a curvilinear lap weld, the blocks have a surface curvature corresponding to that of the articles to be welded, and the bottom block is mounted on an s-shaped support. Orig. art. has: 1 figure. [BO]

SUB CODE: 11, 13/ SUBM DATE: 15Aug63/ ATD PRESS: 5109

Card 2/2

KOLOBKOV, Yu.

84633

S/135/60/000/011/007/016
A006/A001

15.8310 2209 1428 1581

AUTHORS: Matsyuk, L.N., Candidate of Technical Sciences, Reytlinger, S.A., Candidate of Chemical Sciences, Kolobkov, Yu.M., Engineer

TITLE: Welding of Polyethylene Films With Gas Heat Carriers

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 11, pp. 26-29

TEXT: Welding of polyethylene films with gas heat carriers excludes the necessity of using supports, thus presenting a considerable advantage over the heat resistance welding method. Optimum welding conditions were determined on an experimental laboratory machine, either fixed or portable, by one-sided heating by gas carriers of the material to be welded. One or several ГСМ-53 (GSM-53) burner nozzles were used. The experimental machine was used to design a model for welding large-size work under the supervision of N.N. Safronov (Figure 2). The investigation showed that when welding polyethylene films by heated gas, the quality of the joints and the welding speed depended on the distance between the nozzle tip and the material to be welded, the consumption and temperature of gas and on the pressure of the arresting strips on the material. When welding 60-micron thick films using air and one nozzle with a 1.5 mm diameter outlet aperture,

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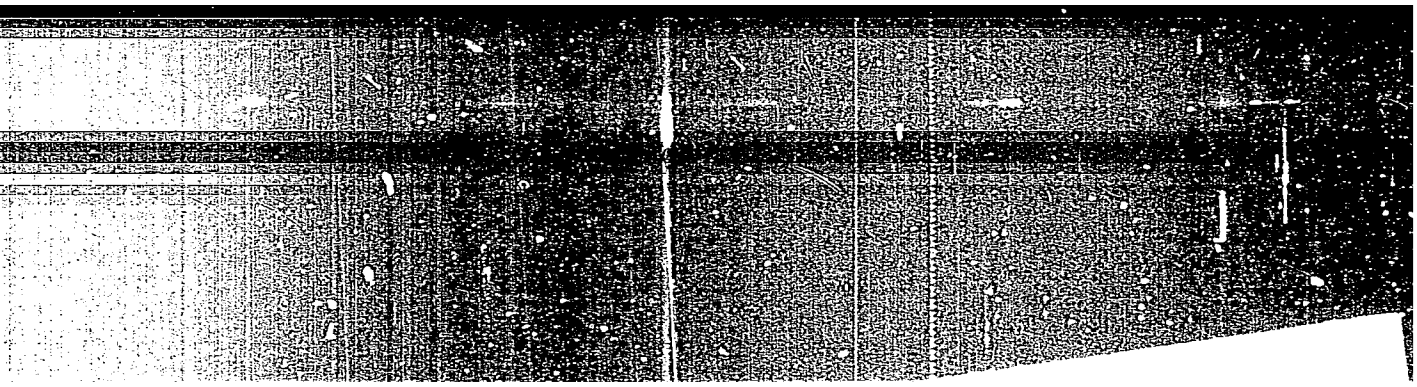

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910007-1"

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B110/B101

15.8160

AUTHORS: Matsyuk, L. N., Kolobkov, Yu. M., Kotovshchikova, O. A., Grishelevich, V. A.

TITLE: Welding of fluoroplast films

PERIODICAL: Plasticheskiye massy, no. 5, 1962, 23-29

TEXT: Welding investigations were carried out on 200-300 μ thick films of: (1) polytetrafluoro ethylene (ftoroplast-4), (2) polytrifluoro chloro ethylene (ftoroplast-3) and (3) various fluorine containing copolymers (ftorlon). The МСП-1 (MSP-1) and МСП-2 (MSP-2) machines with nichrome bands 0.1 mm thick and 2 mm wide were used. Amperage was 8-15 a, temperature of the heating element 150-400°C, pressure 0.15-2 kgf/cm² and the working length of the heating element 390 mm. The following data were determined: (1) shear, (2) tear at monoaxial load, (3) strength of the "T" welded joint, (4) specific strength σ and (5) relative elongation. A tensile-testing machine with thermostat was used for this purpose. (1) Results of the investigation of welded, non-oriented 60,100 and 200 μ thick polytetrafluoro ethylene films (TУМ 549-56 (TUM 549-56)): Heating

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Welding of fluoroplast films

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at 360-380°C for 3-4 min is required for the welding. 13.5 a are necessary for 200 μ and less for thinner films. Pressures are 0.2-0.5 kgf/cm^2. When cooled quickly, the welding seam was more transparent than the basic material. This proves a high content of amorphous phase, since the links of the macromolecules cannot crystallize completely during quick cooling. It is characteristic for ftoroplast-4 films that the tear strength of the weld increases with an increase of the amorphous phase. 70-75% of the strength of the basic material was the best tearing strength for 200 μ, and slightly more for 100 and 60 μ. In the light of these results, a stationary welding installation with two superimposed welding heads was developed for the continuous welding of fluoroplast films. Two endless belts carry the material to the strip heaters 25 cm long and then to the cooling device. Cooling and heating was done under pressure. The maximum heater surface temperature was 500°C, welding seam 5 mm, rate 0.08-0.9 m/min. (2) Investigation of welded polytrifluoro chloro ethylene films showed low strength due to the high crystallization rate of the polymer. (3) Investigation of welded 60-120 μ thick ftorlon films with high degree of crystallization and high density of the amorphous phase showed that, without layer, maximum strength was obtained at 260-300°C and

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